

*Latitude Stations in the Southern Hemisphere.**(Communicated by the Secretaries.)*

In a circular issued by the Central International Geodetic Bureau of date 1905 September, Dr. Albrecht reports progress in the matter of the establishment of latitude stations in the southern hemisphere (cf. *Monthly Notices*, lxiii. pp. 294, 394). The Central Bureau have now arranged for the actual commencement of southern latitude work in 1906 January at two stations on the parallel  $-31^{\circ} 55'$ : one of these is at Bayswater, in West Australia, in longitude  $-115^{\circ} 54' 5''$ , and the other at Oncativo, in Argentina, in longitude  $63^{\circ} 42'$ . Dr. Curt Hessen and Dr. Luigi Carnera have respectively been appointed to the charge of the work.

*The Next International Scheme. A Suggestion.*

By W. Ernest Cooke.

The great photographic Durchmusterung is approaching completion. At a number of observatories this special work will soon be finished, and the officers in charge will be looking for the most useful direction towards which they may turn their energies. Now is the time, therefore, to consider the advisability of continuing the practice of international co-operation, and to discuss suggestions for the next concerted action.

I wish to put forward a plea for united effort in meridian work. Our present haphazard method leads to disappointing results, altogether disproportionate to the skill and labour expended. If the millions of observations that have been taken in the past had been properly co-ordinated we ought to be able to obtain good star positions in abundance in any portion of the sky. This is certainly not the case at present. It is a matter of every-day occurrence that an astronomer desires a number of reference points in some particular field, and as a general rule is obliged to use approximate positions first, and re-observe his reference stars with the transit circle at the next convenient opportunity. If he attempt to obtain the positions from existing catalogues he will probably find that most of his star positions have been determined *once* somewhere or other, but he will be very fortunate if he obtains sufficiently accurate information to bring the positions up to date. It is, moreover, disappointing to the transit observer to feel that he is putting an immense amount of work into a catalogue the greater part of which will never be used.

I believe both these difficulties will be overcome by the following plan:

Let three catalogues be prepared as soon as possible, and astronomers be requested to confine their meridian or other

exact work in future mainly to the stars in one or other of these catalogues.

A. Bright stars. This does not form part of the proposed scheme, but, of course, the regular observation of the principal stars must be continued.

B. Fundamental stars for the general scheme. As a matter of detail I suggest that these be selected of about the sixth magnitude, and in every region of the sky.

C. Main catalogue, comprising, say, three stars to every square degree, and, of course, including the whole of B. This would make a total of over 120,000 stars.

Leaving A to take care of itself, astronomers would be asked to take up *either* B or C. In observing the B stars accuracy would be the main consideration, and no amount of time or trouble should be begrudged for this end. They might also be observed by totally different methods, such as that of the almucantar. In fact, all the resources of exact astronomy should be brought to bear upon the compilation of this catalogue. The positions thus obtained would be adopted as the foundation of the C list. Observers taking up this main catalogue would work through one or two degrees of declination at a time, including at least six of the fundamental stars in each evening's work, and obtaining from them the clock error, and zenith, or equator point. They need not be troubled greatly with anomalies in refraction, reflection, instrumental errors, &c., as their computations would be mainly differential.

In working out the general scheme each observatory might gradually advance zone by zone from the zenith to the pole, arranging for suitable overlaps; or might take charge of a certain section of the sky and repeat every ten years; or there might be a combination of both methods. But the main point is that the position of each star would be determined with fair accuracy during each decade; and by the time we are ready to repeat the photographic work now occupying our attention our standard stars will be ready waiting for us, their positions determined with great accuracy, and their proper motions known with some amount of precision. By that time also the international catalogue will be universally adopted, and all haphazard meridian work will have ceased.

The main idea of this scheme is the preparation of two catalogues, and the promise of some of the leading astronomers to make one or the other the basis of their future working lists. A considerable proportion of the labour of compiling C has been already done in selecting the standard stars for the photographic *Durchmusterung*. There would be some distinct advantages in utilising these same stars; but, whatever method be adopted, the list should be prepared, sanctioned by leading astronomers, and printed. The preparation of B would require great care, but would probably be undertaken by those who have already performed similar work, such as Professor Auwers.

This is all that is really necessary, for when the lists are once sanctioned observers who have the opportunity can start work immediately, knowing that *not one single observation will thenceforward be wasted*, and that the sooner they commence the more valuable will their results eventually become.

Of course an international committee ought, if possible, to be appointed, to meet occasionally and see that there are no gaps; and if they have opportunities of obtaining funds for printing so much the better; but this, though desirable, is not essential. Let us have the scheme discussed, and, if considered advisable, have the catalogues prepared forthwith.

*Perth Observatory, Western Australia :*  
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*On the Secular Accelerations of the Moon's Longitude and Node.*  
By P. H. Cowell.

In this paper I determine the secular accelerations of the Moon's longitude and node from the solar eclipses of the years —1062, —762, —647, —430, and +197.

The historical references are as follows :—

1. Inscription at Babylon :

“On the 26th day of the month Sivan, in the 7th year, the day was turned into night, and fire in the midst of heaven.”

This inscription was communicated to me by Mr. L. W. King, of the Department of Egyptian and Assyrian Antiquities, British Museum, the translator, early in September. I may add that a few days previously I had shown to Professor Newcomb, in MS., the corrections that I had deduced from the other four eclipses mentioned in this paper. It turned out that this eclipse supported the corrections deduced from the other four.

2. Inscription at Nineveh :

“In the month Sivan the Sun underwent an eclipse.”

3. Archilochus, 74 :

Ζεὺς πατὴρ Ὀλυμπίων  
ἐκ μεσημβρίας ἔθηκε νύκτ' ἀποκρύψας φάος  
ἡλίου λάμποντος.

4. Thucydides, II. 28 :

Τοῦ δ' αὐτοῦ θέρους νομμηνία κατὰ σελήνην, ὥσπερ καὶ μόνον δοκεῖ εἶναι γίγνεσθαι δυνατόν, ὃ ἥλιος ἐξέλιπε μετὰ μεσημβρίαν καὶ πάλιν ἀνεπληρώθη, γενόμενος μηνοειδὴς καὶ ἀστέρων τινῶν ἐκφανέντων.

5. Tertullian ad Scapulam, c. 3 :

“Nam et sol ille in conventu Uticensi, extincto pæne lumine, adeo portentum fuit, ut non potuerit ex ordinario deliquio hoc pati, positus in suo hypsomate et domicilio. Habetis astrologos.”